WHAT IS CLAIMED IS:

1. A method for monitoring an optical signal utilizing optical heterodyne detection comprising steps of:

providing an input signal;

providing a local oscillator signal;

attenuating said input signal;

combining said attenuated input signal with said local oscillator signal to create a combined optical signal;

detecting said combined optical signal; and

generating an output signal that is indicative of an optical parameter of said input signal.

2. The method of claim 1 wherein said step of generating an output signal includes monitoring a heterodyne signal that is a component of said combined optical signal.

3. The method of claim 2 wherein said step of attenuating said input signal includes a step of attenuating said input signal to a level of attenuation that maximizes the signal to noise ratio of said heterodyne signal.

4. The method of claim 3 further including a step of adjusting said level of attenuation in response to feedback from said output signal in order to maximize said signal to noise ratio.

5. The method of claim 4 further including steps of measuring intensity noise of said input signal before said input signal is combined with said local oscillator signal, comparing said measured intensity noise of said input signal to the sum of all other noise sources related to said combined optical signal, and attenuating said input signal when said intensity noise of said input signal is the dominant noise source.

6. The method of claim 3 further including a step of adjusting said level of attenuation such that intensity noise from said input signal is approximately equal to shot noise from said local oscillator signal.

7. The method of claim 3 further including a step of adjusting said level of attenuation such that intensity noise from said input signal is equal to the sum of all other noises related to said combined optical signal.

8. The method of claim 3 further including a step of sweeping said local oscillator signal across a range of wavelengths in order to monitor said heterodyne signal.

9. The method of claim 1 wherein said step of generating an output signal includes a step of generating said output signal in a manner that is substantially independent of the polarization state of said input signal.

10. The method of claim 1 wherein said step of attenuating said input signal includes a step of completely blocking transmission of said input signal in order to calibrate an optical coupler or an optical receiver as a function of wavelength.

11. A method for monitoring an optical signal utilizing optical heterodyne detection comprising steps of:

providing an input signal;

providing a local oscillator signal;

attenuating said input signal before said input signal and said local oscillator signal are combined;

combining said attenuated input signal with said local oscillator signal to create a combined optical signal, said combined optical signal including a heterodyne signal, intensity noise from said input signal, and shot noise;

generating an electrical signal in response to said combined optical signal;

generating an output signal from said electrical signal that is indicative of an optical parameter of said input signal; and

adjusting the level of attenuation of said attenuated input signal to maximize the signal to noise ratio of said heterodyne signal.

12. The method of claim 11 wherein said step of generating an output signal includes a step of monitoring said heterodyne signal and wherein said level of attenuation is adjusted in response to feedback from said output signal.

13. The method of claim 12 wherein said level of attenuation is adjusted such that said intensity noise from said input signal is approximately equal to said shot noise signal.

14. A system for optical heterodyne detection comprising:

an attenuator having an input to receive an input signal and having an output for outputting an attenuated input signal;

an optical coupler having a first input and a second input, said first input being optically connected to said attenuator to receive said attenuated input signal, said second input receiving a local oscillator signal, said optical coupler having an output for outputting a combined optical signal that includes said input signal and said local oscillator signal; and

an optical receiver having an input for receiving said combined optical signal from said optical coupler and an output for outputting an electrical signal representative of said combined optical signal.

15. The system of claim 14 further including a processor for receiving said electrical signal from said optical receiver and generating an output signal that is indicative of an optical parameter of said input signal, wherein said processor monitors a heterodyne signal that is a component of said combined optical signal.

16. The system of claim 15 wherein said attenuator is an adjustable attenuator that allows for variable levels of input signal attenuation.

17. The system of claim 16 further including a feedback loop between said processor and said adjustable attenuator, wherein said level of attenuation of said input signal is adjusted to maximize the signal to noise ratio of the heterodyne signal.

18. The system of claim 17 further including a second optical receiver connected to receive a portion of said input signal before said input signal is received by said optical coupler, said second optical receiver being connected to transmit a measure of the intensity noise of said input signal to said processor.

19. The system of claim 16 further including a frequency counter connected to receive a portion of said local oscillator signal before said local oscillator signal is received by said optical coupler, said frequency counter being connected to transmit a measure of the frequency of said local oscillator signal to said processor.

20. The system of claim 15 wherein said optical coupler further includes a second output for outputting a portion of said combined optical signal to said optical receiver, said optical receiver enabling said output signal to be independent of the polarization state of said input signal and balanced with regard to intensity noise of said combined optical signal.